## CLAIMS

What is claimed is:

1. A method for operating a decoder, comprising:

monitoring, during operation of the decoder on a signal received from a channel, the value of at least one extrinsic value; and

based on the monitored at least one value, determining whether the signal comprises a valid code word or comprises only noise.

2. A method as in claim 1, where the decoder comprises one of a LogMap or a MaxLogMap turbo decoder.

3. A method as in claim 1, where during decoding rounds absolute values of extrinsic values tend to increase, provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise, and where determining accurately distinguishes a valid code word from noise, and also obtains information that is indicative of the quality of the decoding process.

4. A method as in claim 1, where the decoder comprises a turbo decoder, and where the turbo decoder comprises a detector that considers at least one inequality where:

1) $SE_AE_B(L) \leq const1 \text{ X } SE_AE_B(1)$;
2) $SE_AE_B(L) \leq const2 \text{ X } S$;
3) $SE_A(L) \leq const3 \text{ X } S$;
4) $SE_B(L) \leq const3 \text{ X } S$;
5) $E_A(L) \leq const4 \text{ X } E_A(1)$;
6) $E_B(L) \leq const4 \text{ X } E_B(1)$;
7) $E_AE_B(L) \leq const4 \text{ X } E_AE_B(1)$;
8) $E_A(L) \leq const5 \text{ X } S$; and

9) $E_B(L) \leq$ const5 X S;

where L represents the number of a last turbo decoder round, where $\leq$ represents 'less than or equal to', where X represents times (multiplication), and where const represents a constant value, where if any one of inequalities are found to be true, then it is determined that the received signal does not comprise a valid turbo coded code word, and where

$SE_AE_B(n)$ denotes a sum of absolute values of soft values after an $n^{th}$ turbo round;
$E_AE_B(n)$ denotes a sum of absolute values of sums of extrinsic values of A-parities and extrinsic values of B-parities after an $n^{th}$ turbo round;
$E_A(n)$ denotes a sum of absolute values of extrinsic values of A-parities after the $n^{th}$ turbo round;
$E_B(n)$ denotes a sum of absolute values of extrinsic values of B-parities after the $n^{th}$ turbo round;
$SE_A(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of A-parities after the $n^{th}$ turbo round;
$SE_B(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of B-parities after the $n^{th}$ turbo round; and
S denotes a sum of absolute values of systematic samples.

5. A method as in claim 4, where a sum of absolute values of systematic samples is at least one of replaced and complemented by a sum of absolute values of parity samples.

6. A method as in claim 4, where const1 equals about 1.125, where const2 equals about 1.5, where const3 equals about 1.25, where const4 equals about 2, and where const5 equals about 0.8.

7. A method as in claim 4, where the threshold constants const1, const2, const3, const4, and const5 are greater when applying an inequality as a quality detector than as a noise/signal detector.

8. A method as in claim 1, where said decoder comprises part of a WCDMA user

equipment.

9. A method as in claim 4, where the value of const is a function of a coding rate.

10. A decoder, comprising:

means for monitoring, during operation of the decoder on a signal received from a channel, the value of at least one extrinsic value; and

means, responsive to the monitored at least one value, for determining whether the signal comprises a valid code word or comprises only noise.

11. A decoder as in claim 10, where the decoder comprises one of a LogMap or a MaxLogMap turbo decoder.

12. A decoder as in claim 10, where during decoding rounds absolute values of extrinsic values tend to increase, provided that the input signal contains a valid code word, as opposed to when the input signal contains only noise, and where said means for determining accurately distinguishes a valid code word from noise, and also obtains information that is indicative of the quality of the decoding process.

13. A decoder as in claim 10, where the decoder comprises a turbo decoder, and where the turbo decoder comprises a detector that considers at least one inequality where:

1) $SE_AE_B(L) \leq \text{const1} \times SE_AE_B(1)$;
2) $SE_AE_B(L) \leq \text{const2} \times S$;
3) $SE_A(L) \leq \text{const3} \times S$;
4) $SE_B(L) \leq \text{const3} \times S$;
5) $E_A(L) \leq \text{const4} \times E_A(1)$;
6) $E_B(L) \leq \text{const4} \times E_B(1)$;
7) $E_AE_B(L) \leq \text{const4} \times E_AE_B(1)$;
8) $E_A(L) \leq \text{const5} \times S$; and

9) $E_B(L) \leq$ const5 X S;

where L represents the number of a last turbo decoder round, where $\leq$ represents 'less than or equal to', where X represents times (multiplication), and where const represents a constant value, where if any one of inequalities are found to be true, then it is determined that the received signal does not comprise a valid turbo coded code word, and where

$SE_AE_B(n)$ denotes a sum of absolute values of soft values after an $n^{th}$ turbo round;
$E_AE_B(n)$ denotes a sum of absolute values of sums of extrinsic values of A-parities and extrinsic values of B-parities after an $n^{th}$ turbo round;
$E_A(n)$ denotes a sum of absolute values of extrinsic values of A-parities after the $n^{th}$ turbo round;
$E_B(n)$ denotes a sum of absolute values of extrinsic values of B-parities after the $n^{th}$ turbo round;
$SE_A(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of A-parities after the $n^{th}$ turbo round;
$SE_B(n)$ denotes a sum of absolute values of sums of systematic samples and extrinsic values of B-parities after the $n^{th}$ turbo round; and
S denotes a sum of absolute values of systematic samples.

14. A decoder as in claim 13, where a sum of absolute values of systematic samples is at least one of replaced and complemented by a sum of absolute values of parity samples.

15. A decoder as in claim 13, where const1 equals about 1.125, where const2 equals about 1.5, where const3 equals about 1.25, where const4 equals about 2, and where const5 equals about 0.8.

16. A decoder as in claim 13, where the threshold constants const1, const2, const3, const4, and const5 are greater when applying an inequality as a quality detector than as a noise/signal detector.

17. A decoder as in claim 10, where said decoder comprises part of a WCDMA user

equipment.

18. A decoder as in claim 13, where the value of const is a function of a coding rate.